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For USSN 10/050,834 in the name of Reeve, entitled: SILICON-CONTAINING TREATMENTS FOR SOLID SUBSTRATES, substitute brief coverletter, 13 pgs. substitute brief, return receipt postcard.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:)	Before the Board
)	of Appeals
John A. Reeve)	
)	
Serial Number: 10/640,367)	
)	
Filed: August 13, 2003)	
)	
Title: SILICON-CONTAINING)	
TREATMENTS FOR)	
SOLID SUBSTRATES)	
)	
Attorney Docket: MSH – 245)	January 16, 2006

BRIEF ON APPEAL

This is an appeal from the office action mailed on May 16, 2005, rejecting claims 1 to 6 and 9 to 54. A Notice of Appeal was timely filed on August 11, 2005, with the accompanying fee.

Authorization to charge the appeal brief fees of \$250.00 was granted in the cover letter of the original submission of the appeal brief in this matter.

(C)(1)(i) REAL PARTY IN INTEREST

Aegis Environmental, 2205 Ridgewood Drive, Midland, Michigan 48642 is the real party in interest, having an assignment from the inventor John A. Reeve recorded at Reel/Frame: 015679/0943 on August 12, 2004.

(C)(1)(ii) RELATED APPEALS AND INTERFERENCES

To the best of Appellant's knowledge, there are no appeals or interferences related to the present one which are likely to directly affect or be directly affected by the Board's decision in the pending appeal.

(C)(1)(iii) STATUS OF THE CLAIMS

Claims 1 to 6 and 9 to 54 are in the application and all are being appealed. Claims 7 and 8 have been previously cancelled.

(C)(1)(iv) STATUS OF AMENDMENTS

The Examiner has entered all of the amendments and they are reflected in the claims attached in the claims appendix. No amendments were entered after the final rejection.

(C)(1)(v) SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1. A method of treating a solid substrate, (I) providing a solid substrate, specification, page 5, lines 4 to 18; (II) spraying the solid substrate with an aqueous solution, specification, page 5, lines 19 to 26; of at least one material capable of reacting at or near the solid substrate surface selected from a group consisting of (i) reactive silanes, specification, page 6, line 17 to page 8, line 12 and page 8, lines 25 to 27; (ii) reactive siloxanes, specification, page 8, lines 15 to 24; (iii) hydrolysis products of (i), specification, page 8, lines 28 to 34 and page 9, lines 1 to 3; (iv) hydrolysis products of (ii), specification, page 8, lines 28 to 34 to page 9, lines 1 to 3; and (v), combinations of any of (i), (ii), (iii), and (iv), (III) spraying the solid substrate from (II) with a silicon-containing material capable of reacting at or near the solid substrate surface, specification, page 9, lines 4 to 19; a. materials containing multi-silanol groups, specification, page 9, line 7; b. siliconates, specification, page 9, line 7; c. silicates, specification, page 9, line 7; and, d. any combinations of a., b., and c, specification, page 9, lines 7 to 9.

Claim 2. A method of treating a solid substrate, (I) providing a solid substrate, specification, page 5, lines 4 to 18; (II) immersing the solid substrate in an aqueous solution, specification, page 6, lines 11 to 13; of at least one material capable of reacting at or near the solid substrate surface selected from a group consisting of (i) reactive silanes, specification, page 6, line 17 to page 8, line 12 and page 8, lines 25 to 27; (ii) reactive siloxanes, specification, page 8, lines 15 to 24; (iii) hydrolysis products of (i), specification, page 8, lines 28 to 34 and page 9, lines 1 to 3; (iv) hydrolysis products of (ii), specification, page 8, lines 28 to 34 to page 9, lines 1 to 3; and (v), combinations of any of (i), (ii), (iii), and (iv), dipping the solid substrate from (II), specification, page 6, lines 4, 11 to 13; in a silicon-containing material capable of reacting at or near the solid substrate surface, specification, page 9, lines 4 to 19; a. materials containing multi-silanol groups, specification, page 9, line 7; b. siliconates, specification, page 9, line 7; c.

silicates, specification, page 9, line 7; and, d. any combinations of a., b., and c, specification, page 9, lines 7 to 9.

Claim 3. A method of treating a solid substrate, (I) providing a solid substrate, specification, page 5, lines 4 to 18; (II) spraying the solid substrate with an aqueous solution, specification, page 5, lines 19 to 26; of at least one material capable of reacting at or near the solid substrate surface selected from a group consisting of (i) reactive silanes, specification, page 6, line 17 to page 8, line 12 and page 8, lines 25 to 27; (ii) reactive siloxanes, specification, page 8, lines 15 to 24; (iii) hydrolysis products of (i), specification, page 8, lines 28 to 34 and page 9, lines 1 to 3; (iv) hydrolysis products of (ii), specification, page 8, lines 28 to 34 to page 9, lines 1 to 3; and (v), combinations of any of (i), (ii), (iii), and (iv), while essentially simultaneously spraying the solid substrate from (II) with a silicon-containing material capable of reacting at or near the solid substrate surface, specification, page 9, lines 4 to 19; (II) with a silicon-containing material capable of reacting at or near the solid substrate surface, a. materials containing multi-silanol groups, specification, page 9, line 7; b. siliconates, specification, page 9, line 7; c. silicates, specification, page 9, line 7; and, d. any combinations of a., b., and c, specification, page 9, lines 7 to 9.

(C)(1)(vi) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Rejection of claims 1 to 3, 10 to 34, 36 to 38, 40, 41, 43 to 45, 47, 48, 50 to 52 and 54 as being unpatentable over U.S. Patent Publication 2002/0048679 by Lohmer, et al., in view of U.S. Patent 4,632,848.

Provisional rejection of claims 4 to 6, 9, 20, 26, and 32 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, and 20 of copending Application No. 10/052002.

(C)(1)(vii) ARGUMENTS

Rejection of claims 1 to 3, 10 to 34, 36 to 38, 40, 41, 43 to 45, 47, 48, 50 to 52, and 54 under 35 USC §103(a) as being unpatentable over U.S. Patent Publication 2002/0048679 by Lohmer, et al in view of U.S. Patent 4,632,848

Appellant disagrees with the Examiner's combination of these references in the manner that he has, and further, the Examiner has drawn the wrong conclusions from the teachings in those references.

The Examiner has noted that Lohmer teaches a method for treating a solid substrate comprising reacting the substrate with a reactive silane and then reacting the treated surface with a hydrophobic compound that ensures water-repellency. Applicant notes that the hydrophobic compounds are set forth by Lohmer at paragraph [0054] of the specification, and it is further noted that none of them deal with siliconates, silicates, or materials containing multi-silanol groups.

Because of the nature of this teaching, the Examiner combines Gosset, et al with Lohmer, et al and states that this combination teaches the forming of a protective coating on a surface, using a hydrophobic compound, potassium silicate, to improve the resistance to water.

Applicant notes for the Examiner that Gosset, et al teaches the combination of the potassium silicate with the entire coating material of Gosset, et al. Since Gosset, et teaches the use and preparation of a system for a protective coating, why would one skilled in the art, having the Lohmer, et al patent in hand, be directed to segregate the potassium silicate of Gosset, et al and apply it as a second coating to the treated substrate? One would not of course. These two references have been impermissibly combined and the wrong conclusions have been drawn as a consequence of such a combination.

Provisional rejection of claims 4 to 6, 9, 20, 26, and 32 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, and 20 of copending Application No. 10/052002.

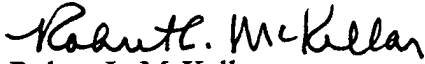
The Appellant disagrees with the Examiner with regard to this rejection. The copending Application No. 10/052002 deals with the use of dianions in aqueous solutions. Claim 1 claims a method of treating a solid substrate by (I) providing a solid substrate and (II) contacting the solid substrate with an aqueous solution of at least one compound having a dianion, and thereafter (III) contacting the solid substrate from (II) with a silicon-containing material capable of reacting at or near the solid substrate surface. Claim 2 is dependent on claim 1 and includes a catalyst for the reaction of step (III). Claim 20 is a Markush group listing of the solid substrates.

The combination of claim 4 in the instant invention with claim 1 in the instant invention provides a composition that is an aqueous solution of a reactive silicon-containing material carrying a dianion compound.

In the instant claims, the dianion is combined with the silicon-containing material and then applied to the solid substrate, whereas in the copending application 10/05002, the solid substrate is treated with only the dianion and then with the reactive silicon-containing material. The two methods are different and the results obtained by each of the methods are different as can be witnessed from the examples of the copending application and the examples of the instant application. There is therefore, no double patenting potential and the provisional double patenting rejection should be withdrawn.

Based on the above remarks the Appellant believes that the claims are allowable over the cited art and the Appellant requests that the Board reverse the Examiner in all of the rejections.

Respectfully submitted,


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(C)(1)(viii) CLAIMS APPENDIX

1. A method of treating a solid substrate, the method comprising:
 - (I) providing a solid substrate;
 - (II) spraying the solid substrate with an aqueous solution of at least one material capable of reacting at or near the solid substrate surface selected from a group consisting of (i) reactive silanes, (ii) reactive siloxanes, (iii) hydrolysis products of (i), (iv) hydrolysis products of (ii), and (v), combinations of any of (i), (ii), (iii), and (iv), and essentially, immediately thereafter,
 - (III) spraying the solid substrate from (II) with a silicon-containing material capable of reacting at or near the solid substrate surface selected from the group consisting of :
 - a. materials containing multi-silanol groups,
 - b. siliconates,
 - c. silicates, and,
 - d. any combinations of a., b., and c.
2. A method of treating a solid substrate, the method comprising:
 - (I) providing a solid substrate;
 - (II) immersing the solid substrate in an aqueous solution of a at least one material capable of reacting at or near the solid substrate surface selected from a group consisting of (i) reactive silanes, (ii) reactive siloxanes, (iii) hydrolysis products of (i), (iv) hydrolysis products of (ii), and (v), combinations of any of (i), (ii), (iii), and (iv), and essentially, immediately thereafter,
 - (III) dipping the solid substrate from (II) in a silicon-containing material capable of reacting at or near the solid substrate surface selected from the group consisting of :
 - a. materials containing multi-silanol groups,
 - e. siliconates,
 - f. silicates, and,
 - g. any combinations of a., b., and c.
3. A method of treating a solid substrate, the method comprising:
 - (I) providing a solid substrate;
 - (II) spraying the solid substrate with an aqueous solution of a-at least one material capable of reacting at or near the solid substrate surface selected from a group

consisting of (i) reactive silanes, (ii) reactive siloxanes, (iii) hydrolysis products of (i), (iv) hydrolysis products of (ii), and (v), combinations of any of (i), (ii), (iii), and (iv), while essentially simultaneously

(III) spraying the solid substrate from (II) with a silicon-containing material capable of reacting at or near the solid substrate surface selected from the group consisting of :

- a. materials containing multi-silanol groups,
- b. siliconates,
- c. silicates, and,
- d. any combinations of a., b., and c.

4. A method as claimed in claim 1 wherein the aqueous solution in (II) also contains a material having a dianion.

5. A method as claimed in claim 2 wherein the aqueous solution in (II) also contains a material having a dianion.

6. A method as claimed in claim 3 wherein the aqueous solution in (II) also contains a material having a dianion.

9. A method as claimed in claim 3 wherein there is in addition, a catalyst present for the reaction of (III).

10. The method as claimed in claim 1 wherein the material in (II) is a silane.

11. The method as claimed in claim 10 wherein the silane is an organofunctional silane.

12. The method as claimed in claim 2 wherein the material in (II) is a silane.

13. The method as claimed in claim 12 wherein the silane is an organofunctional silane.

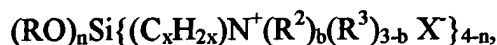
14. The method as claimed in claim 3 wherein the material in (II) is a silane.

15. The method as claimed in claim 14 wherein the silane is an organofunctional silane.

16. The method as claimed in claim 1 wherein the material in (II) is an alkoxy functional silane.

17. The method as claimed in claim 16 wherein the silane is an aminoorganofunctional silane.

18. The method as claimed in claim 17 wherein the aminoorganofunctional silane has the general formula:



wherein n has a value of 1, 2, or 3; x has a value of 1 to 20; R is an alkyl group having 1 to 6 carbon atoms; each R^2 is hydrogen or an alkyl group selected from the group consisting of 1 to 6 carbon atoms, X is a halogen, each R^3 is hydrogen or an alkyl group selected from the group consisting of 1 to twenty carbon atoms and b has a value of 0, 1, 2, or 3.

19. The method as claimed in claim 18 wherein R is a methyl radical, n has a value of 3, x has a value of 3, each R^2 is a methyl group.

20. The method as claimed in claim 1 wherein the solid substrate is selected from the group consisting of:

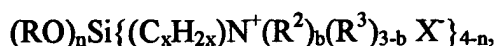
- | | | | |
|-----------------------|--------------------------|-------------------------|------------------|
| a. cotton, | b. polyester, | c. nylon, | d. rayon, |
| e. rubber, | f. fibers, | g. acrylic, | h. foams, |
| i. polypropylene, | j. polyethylene, | k. mineral, | l. polyurethane, |
| m. paper, | n. glass, | o. silica, | p. wood, |
| q. concrete, | r. other solid polymers, | s. other hard surfaces, | and |
| t. building products. | | | |

21. The method as claimed in claim 16 wherein the alkoxysilane is trimethoxysilane.

22. The method as claimed in claim 2 wherein the material in (II) is an alkoxy functional silane.

23. The method as claimed in claim 22 wherein the silane is an aminoorganofunctional silane.

24. The method as claimed in claim 23 wherein the aminoorganofunctional silane has the general formula:



wherein n has a value of 1, 2, or 3; x has a value of 1 to 20; R is an alkyl group having 1 to 6 carbon atoms; each R^2 is hydrogen or an alkyl group selected from the group consisting of 1 to 6 carbon atoms, X is a halogen, each R^3 is hydrogen or an alkyl group selected from the group consisting of 1 to twenty carbon atoms and b has a value of 0, 1, 2, or 3.

25. The method as claimed in claim 24 wherein R is a methyl radical, n has a value of 3, x has a value of 3, each R^2 is a methyl group.

26. The method as claimed in claim 2 wherein the solid substrate is selected from the group consisting of:

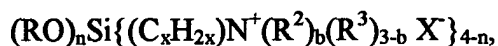
- | | | | |
|-----------------------|--------------------------|-------------------------|------------------|
| a. cotton, | b. polyester, | c. nylon, | d. rayon, |
| e. rubber, | f. fibers, | g. acrylic, | h. foams, |
| i. polypropylene, | j. polyethylene, | k. mineral, | l. polyurethane, |
| m. paper, | n. glass, | o. silica, | p. wood, |
| q. concrete, | r. other solid polymers, | s. other hard surfaces, | and |
| t. building products. | | | |

27. The method as claimed in claim 22 wherein the alkoxysilane is trimethoxysilane.

28. The method as claimed in claim 3 wherein the material in (II) is an alkoxy functional silane.

29. The method as claimed in claim 28 wherein the silane is an aminoorganofunctional silane.

30. The method as claimed in claim 29 wherein the aminoorganofunctional silane has the general formula:



wherein n has a value of 1, 2, or 3; x has a value of 1 to 20; R is an alkyl group having 1 to 6 carbon atoms; each R^2 is hydrogen or an alkyl group selected from the group consisting of 1 to 6 carbon atoms, X is a halogen, each R^3 is hydrogen or an alkyl group selected from the group consisting of 1 to twenty carbon atoms and b has a value of 0, 1, 2, or 3.

31. The method as claimed in claim 30 wherein R is a methyl radical, n has a value of 3, x has a value of 3, each R^2 is a methyl group.

32. The method as claimed in claim 3 wherein the solid substrate is selected from the group consisting of:

- | | | | |
|-----------------------|--------------------------|-------------------------|------------------|
| a. cotton, | b. polyester, | c. nylon, | d. rayon, |
| e. rubber, | f. fibers, | g. acrylic, | h. foams, |
| i. polypropylene, | j. polyethylene, | k. mineral, | l. polyurethane, |
| m. paper, | n. glass, | o. silica, | p. wood, |
| q. concrete, | r. other solid polymers, | s. other hard surfaces, | and |
| t. building products. | | | |

33. The method as claimed in claim 28 wherein the alkoxysilane is trimethoxysilane.

34. The method as claimed in claim 1 wherein the material in (II) is an oligomer siloxane.

35. The method as claimed in claim 1 wherein the material in (II) is a polymeric siloxane.

36. The method as claimed in claim 1 wherein the material in (II) is a disilane.

37. The method as claimed in claim 1 wherein the material in (II) contains an — $\text{Si}(\text{C})_y\text{Si}$ — linkage.

38. The method as claimed in claim 37 wherein y has a value of from 1 to 12.

39. The method as claimed in claim 1 wherein the material in (II) is a silicone/organic copolymer.

40. A solid substrate when treated by the method of claim 1.

41. The method as claimed in claim 2 wherein the material in (II) is an oligomer siloxane.

42. The method as claimed in claim 2 wherein the material in (II) is a polymeric siloxane.

43. The method as claimed in claim 2 wherein the material in (II) is a disilane.

44. The method as claimed in claim 2 wherein the material in (II) contains an — $\text{Si}(\text{C})_y\text{Si}$ — linkage.

45. The method as claimed in claim 44 wherein y has a value of from 1 to 12.

46. The method as claimed in claim 2 wherein the material in (II) is a silicone/organic copolymer.

47. A solid substrate when treated by the method of claim 2.
48. The method as claimed in claim 3 wherein the material in (II) is an oligomeric siloxane.
49. The method as claimed in claim 3 wherein the material in (II) is a polymeric siloxane.
50. The method as claimed in claim 3 wherein the material in (II) is a disilane.
51. The method as claimed in claim 3 wherein the material in (II) contains an — $\text{Si}(\text{C})_y\text{Si}$ — linkage.
52. The method as claimed in claim 51 wherein y has a value of from 1 to 12.
53. The method as claimed in claim 3 wherein the material in (II) is a silicone/organic copolymer.
54. A solid substrate when treated by the method of claim 3.

(C)(1)(ix) EVIDENCE APPENDIX

No additional evidence was presented.

(C)(1)(x) RELATED PROCEEDINGS APPENDIX

There are no related proceedings in this matter.